IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A plasma processor, comprising:

a processing vessel having a holder holding a substrate to be processed;

a microwave antenna provided on the processing vessel so as to oppose the substrate to be processed; and

a processing gas supply part provided between the substrate to be processed on the holder and the microwave antenna so as to oppose the substrate to be processed,

~~characterized in that~~ the process gas supply part [[has]] including a plurality of first openings through which plasma formed in the processing vessel passes, a process gas channel connectable to a process gas source, a plurality of second openings communicating with the process gas channel, and a cooling medium channel through which a cooling medium cooling the process gas supply part flows, wherein the cooling medium includes a cooling gas and mist; and

a cooling medium mixer configured to mix the cooling gas and mist into the cooling medium and supply the cooling medium to the cooling medium channel of the process gas supply part.

2. (Currently Amended) The plasma processor as claimed in claim 1, ~~characterized in that~~ wherein the cooling medium includes SF_6.

3. (Currently Amended) A plasma processor, comprising:

a processing vessel having a holder holding a substrate to be processed;

a microwave antenna provided on the processing vessel so as to oppose the substrate to be processed; and

a processing gas supply part provided between the substrate to be processed on the holder and the microwave antenna so as to oppose the substrate to be processed,

~~characterized in that~~ the process gas supply part [[has]] including a plurality of first openings through which plasma formed in the processing vessel passes, a process gas channel connectable to a process gas source, a plurality of second openings communicating with the process gas channel, and a cooling medium channel through which a cooling medium cooling the process gas supply part flows[[,]]; and

~~wherein~~ a cooling medium circulator ~~circulating the cooling medium is~~ connected to the cooling medium channel and configured to circulate the cooling medium, the cooling medium circulator including a compressor configured to compress the cooling medium and a reserve tank that retains the compressed cooling medium.

4. (Currently Amended) The plasma processor as claimed in claim 3, ~~characterized in that~~ wherein the cooling medium circulator has cooling means for cooling the cooling medium.

5. (Currently Amended) The plasma processor as claimed in claim 3, ~~characterized in that~~ wherein the cooling medium circulator has cooling medium control means for controlling an amount of cooling of the process gas supply part by the cooling medium based on temperature measured by temperature measurement means provided in the process gas supply part.

6. (Currently Amended) The plasma processor as claimed in claim 5, ~~characterized in that~~ wherein the cooling medium control means is flow rate control means for controlling flow rate of the cooling medium.

7. (Currently Amended) The plasma processor as claimed in claim 5, ~~characterized in that~~ wherein the cooling medium control means is pressure control means for controlling pressure of the cooling medium.

8. (Currently Amended) The plasma processor as claimed in claim 7, ~~characterized in that~~ wherein the pressure of the cooling medium channel is set to 0.2-1 MPa.

9. (Currently Amended) The plasma processor as claimed in claim 3, ~~characterized in that~~ wherein the cooling medium includes a cooling gas and mist.

10. (Currently Amended) The plasma processor as claimed in claim 3, ~~characterized in that~~ wherein the cooling medium includes SF_6.

11. (New) The plasma processes as claimed in claim 1, wherein the cooling medium mixer comprises a mixing part and a mist source, the mist source configured to generate mist by atomizing supplied H_2O.